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Letter to the Editor

Lactobacillus rhamnosus a cause of Gram-positive rods bacteremia after prophylactic probiotic consumption

ARTICLE INFO

Handling Editor: Patricia Schlagenhauf

Dear Editor,

Lactobacillus rhamnosus is an anaerobic or facultative anaerobic Gram-positive rod that is commonly found in the human gastrointestinal (GI) tract and vaginal tract [1]. Infections, and especially *bacteremia* secondary to *L. rhamnosus* have not been well established in medical literature. Previously considered as non-pathogenic to humans, *Lactobacillus* spp. have emerged as new bacterial pathogens. *We described herein the case of L. rhamnosus bloodstream infection in a patient with radiation enteritis a after prophylactic probiotic consumption.*

An 84-year-old woman with a past history of radiation enteritis was admitted to surgery department for diarrhea and fever at 39°C. Since a 5-months-*surgery for bowel obstruction, she was monitored for malnutrition, and a permanent central venous catheter (CVC) had been implanted for home parental nutrition. On admission, physical examination revealed blood pressure of 110/*65 mmHg, *a regular heartbeat at* 98/min, *fever (39,2 C°). Routine laboratory findings showed an elevated white blood cell count (26.5 × 109/L) and elevated CRP (*175 mg/l*).* Serum electrolytes, kidney and liver functions were normal. *The Gram stain on anaerobic and aerobic blood culture (Bact/ALERT® FA Plus (aerobic) and FN Plus (anaerobic) bottles, BioMérieux, Lyon, France) showed quite numerous Gram-positive rod-shaped bacteria (GPR) (Fig. 1). Blood cultures drawn from CVC were likewise positive showing the same aspect of GPR.* L. rhamnosus *identification was realized with* matrix-assisted laser desorption/ionization time-of-flight *mass spectrometry (MALDI Biotyper-Microflex®, Bruker Daltonics, Bremen, Germany). Differential positivity time was not in favor of a catheter-related bloodstream infection. Trans thoracic echocardiogram and thoracic and abdominal-pelvic computed tomography revealed no secondary localizations.* According to PK/PD target, the isolate tested was susceptible with increased exposure to amoxicillin with MIC of 4 mg/L. Based on the culture results, the dose of ampicillin was increased to 100 mg/kg/daily for 7 days *and the CVC was removed. Our anamnestic survey and investigations concluded to a daily self-medicating of commercially available probiotic formulation. The evolution was favorable and the patient was discharge from hospital* with no evidence of relapse afterwards.

L. rhamnosus should be considered in patients with probiotic related bacteremia with atypical GPR at microscopic Gram stain examination. No enlargement of antibiotic therapy is needed if the patient receives amoxicillin with adequate doses as recommended in strains with ampicillin MIC ≤2 mg/L. Thus, *we highlighted a possible association of systemic infection with 'probiotic' formulations containing lactobacilli; the presence of lactobacillus in blood culture should not be routinely considered as a contaminant and careful evaluation of clinical presentation is recommended. In addition to that,* vigilance regarding the detection of possible rare cases of infection due to probiotics should be maintained, especially with the excessive current probiotic consumption [2]. It is also established that prophylactic probiotic use and may be a risk factor for initial recurrence of *Clostridioides difficile* infection, with a significantly higher recurrence rates in patients using prophylactic probiotics [3].

In a large cohort of 35 patients with confirmed L. rhamnosus infections, more than half of patients had underling comorbidities as disruption of the GI tract [1]. *In our case, catheter related bacteremia was not concluded regarding differential positivity time. We though that our L. rhamnosus bacteriema can be explained by a* micro-inflammation and digestive bacterial translocation, in a patient with a radiation enteritis and a probably acute or chronic lesions in the small bowel wall. *L. rhamnosus* bacteraemia was also described among immunocompetent patients with ischemic and/or ulcerative colitis [4].

Many strains of Lactobacillus including L. *rhamnosus* are resistant to vancomycin, with some reports of resistance to ciprofloxacin, tetracycline, meropenem, metronidazole, and sulfonamides and intermediate resistance to linezolid [5]. *Due to a lack of consensus and/or recommendations in patients with i*nvasive infections from Lactobacillus species, *we used amoxicillin regarding susceptibility testing with a s*hort-course antimicrobial therapy and a removal of CVC.

Author contributions

SZ, JP and TK were the major contributors in writing the manuscript and performing the literature review. All authors have read and agreed to the published version of the manuscript.

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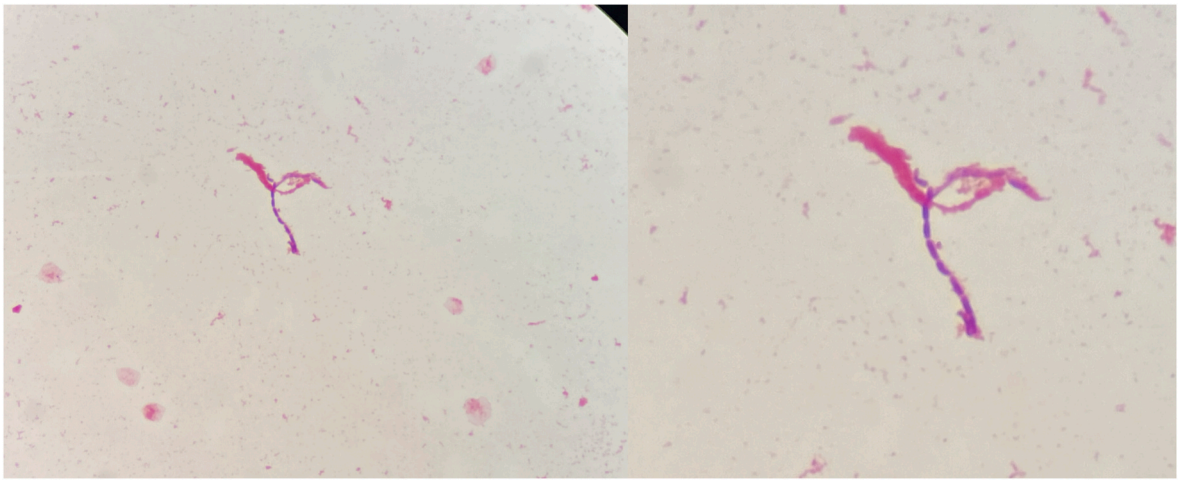

Fig. 1. Blood culture Gram stain reveals Gram-positive rods in chains (original magnification, × 100).

Data availability statement

Data available on request due to privacy restrictions. The data presented in this case report are available on request from the corresponding author.

Declaration of competing interest

The authors declare no conflicts of interest.

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